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Factors Influencing Maternal Health Service Utilization among Women of Childbearing Age in Jos East LGA, Plateau State, Nigeria

[1]Samue B. Kaze, [2]Ronas Richard

[1]Faculty of Computing and Information Technology, Newgate University Minna, Nigeria, kazesam99@gmail.com, +2348139725938
[2]Department of Environmental Health, University of Abuja, Nigeria. ronas. richard@uniabuja.edu.ng
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ABSTRACT

Background: Maternal health services utilization is crucial for ensuring safe pregnancies and reducing maternal mortality. However, factors influencing utilization among women of reproductive age in rural areas of Plateau State remain understudied.

Objective: This study aimed to assess the utilization of maternal health services and identify associated factors among women of reproductive age in selected villages of Jos East LGA, Plateau State.

Methods: A cross-sectional study was conducted, and 377 properly completed questionnaires were analyzed. Socio-demographic characteristics, knowledge, attitudes, utilization, and factors influencing utilization were assessed using structured questionnaires. Descriptive statistics and chi-square tests were performed.

Results: The age distribution of respondents showed that the majority (65.7%) fell within the 18 to 35 age range. Regarding marital status, most respondents (68.0%) were married. In terms of educational attainment, the highest proportion (35.0%) had completed secondary education. Traders constituted the largest occupational group, accounting for 45.1% of respondents. Furthermore, the majority of respondents reported modest personal and family incomes. The study also found that 65.2% of respondents demonstrated good knowledge and positive attitudes towards maternal health services. However, there were notable gaps in knowledge, with only 38.4% of respondents aware of danger signs during pregnancy and nutritional requirements. Factors such as age ($p < 0.001$), marital status ($p = 0.001$), tribal affiliation ($p = 0.005$), occupation ($p = 0.036$), and family income ($p = 0.009$) were found to significantly influence utilization levels.

Conclusion: This study provides valuable insights into the utilization of maternal health services among women of reproductive age in rural Plateau State. Despite generally positive attitudes, addressing knowledge gaps and socio-demographic disparities is essential for improving access to maternal healthcare services. Systemic interventions to enhance service delivery and ensure equitable access are warranted to mitigate challenges identified in this study.

Key words: Maternal health services, utilization, reproductive age women, socio-demographic factors, knowledge, attitudes, Jos East, Plateau State, Nigeria.

Introduction

The process of giving birth encompasses both physiological and psychological complexities, representing significant life events for women, their families, and communities (Ängeby et al., 2018; Redshaw & Whynter, 2022). Labor onset, a pivotal phase in childbirth, involves progressive changes in the cervix and uterine contractions, delineating the latent and active stages (WHO, 2018; Dixon, 2011; McIntosh, 2013). Prolonged labor, exceeding 24 hours, poses substantial risks to maternal and fetal health, including increased mortality rates and complications (Ritno, 2016; American Pregnancy Association, 2021). Globally, maternal mortality remains a significant concern, particularly in developing countries such as Nigeria, where the maternal mortality ratio is alarmingly high (NDHS, 2018; WHO, 2015). Prolonged labor contributes significantly to maternal deaths and necessitates interventions such as instrumental deliveries and emergency Cesarean sections (CS) (Lowe, 2007; Shields et al., 2007). Various factors, including maternal and fetal characteristics, influence the occurrence of prolonged labor, emphasizing the importance of understanding and addressing these determinants (Senecal et al., 2005; Allen et al., 2009).

Access to maternal healthcare services is crucial for mitigating maternal mortality and ensuring positive maternal and child health outcomes (Desalew et al., 2014; Tsawe et al., 2015). However, challenges persist in accessing and utilizing these services, particularly in resource-constrained settings and among marginalized populations (Yaya et al., 2018; Nuamah et al., 2019). Improved maternal healthcare services, encompassing antenatal care, skilled birth attendance, and postnatal care, play a pivotal role in preventing complications and promoting maternal and child well-being (Nuamah et al., 2019). Despite efforts to enhance maternal healthcare access and quality, gaps persist, necessitating further exploration of factors influencing maternal health

service utilization among women of childbearing age. This study investigated the multifaceted determinants affecting maternal health service utilization in Plateau State, Nigeria and similar contexts.

Methods

Study area

The study was conducted in Jos East LGA of plateau state, Nigeria. Jos East is a Local Government Area in Plateau State, Nigeria. Its headquarters are in the town of Angware. its predominant tribe is The Afizere' also known as Jarawa, Jos East is a dividend of Jos where Jos North, and Jos south are the rest dividends, Jos east is a local government in plateau state, the Asharwa international dance group is major dance group of the Afizere people they represented Nigeria in countries like UK, US, South Africa, Kenya, Ukraine etc. It's also a very well-known tribe in Nigeria. It had an area of 1,020 km2 and a population of 85,602 at the 2006 census.

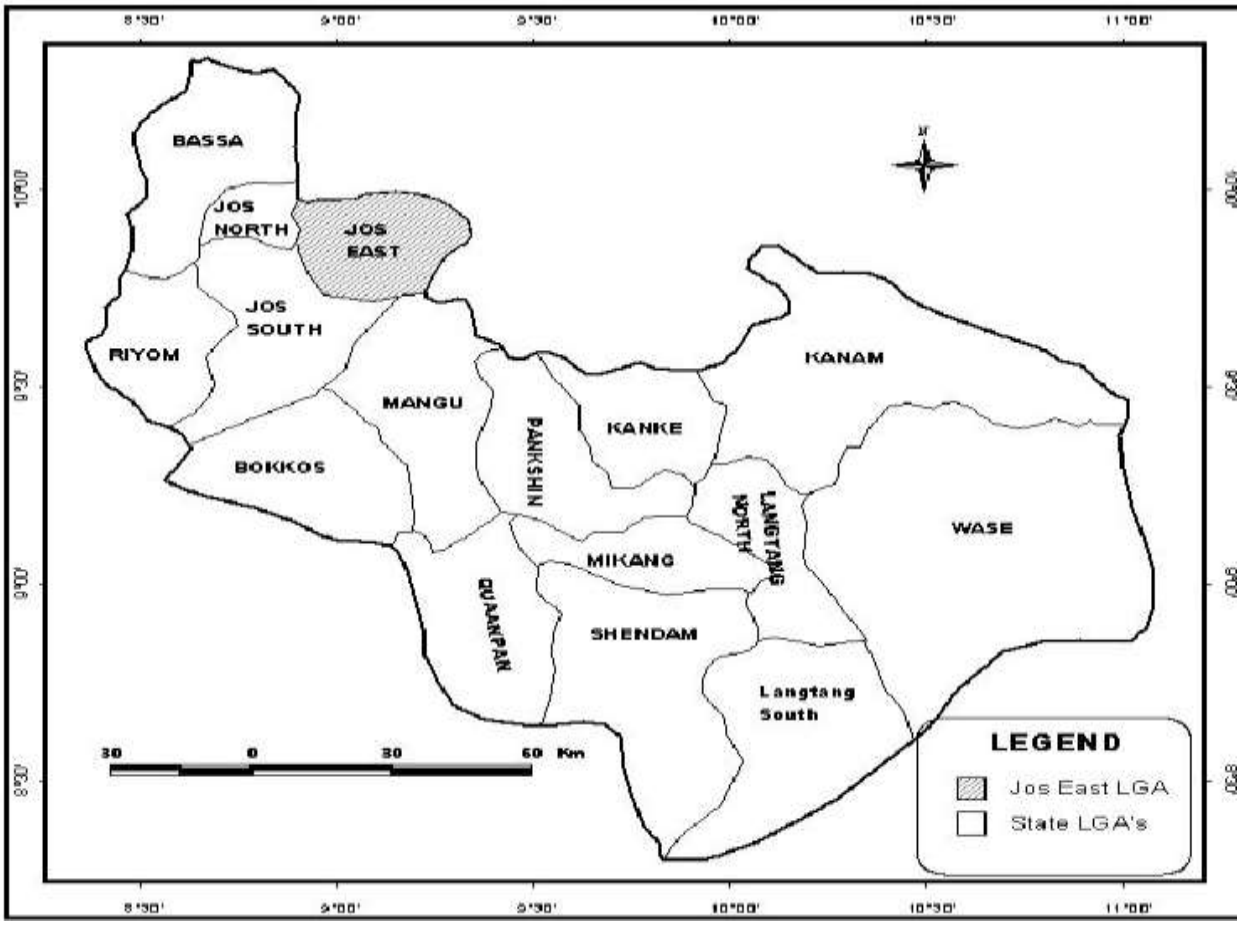

Figure 1: Map of Plateau State showing Jos East LGA ***Source:*** Wuyep *et al*. (2013)

Study design

A descriptive cross-sectional study design was used for this study to assess the factors influencing Maternal Health Service Utilization among Women of Childbearing Age in Jos East LGA, Plateau State, Nigeria

Study population

This study was conducted among women reproductive age Jos East Local Government Area of Plateau State, Nigeria.

Inclusion and exclusion criteria

Inclusion Criteria

1. Women of reproductive age, between 15-49 years
2. Women of reproductive age who are resident in rural or urban communities of Taraba State

Exclusion Criteria

1. Eligible women who have been resident in the State for less than one year
2. Women who were not disposed to take part in the study.

Sample size

Sample size was obtained using the descriptive studies sample size determination formula, as given below:

$n = \frac{Z^2\, p(100-p)}{e^2}$(Scott, 2013).

Where:

n = Sample size to be obtained

Z = the normal curve that cuts off an area at the tails 1.96 at 95% Confidence Interval

e = is the margin of precision (5%)

p = (33.6%) Proportion of women who utilized postnatal care services (Nuamah et al., 2019).

100-p =q =Proportion of women who do not utilized postnatal care services

e = Margin of error (5%).

Sample size (n) $= 1.96^2 \frac{(33.6\ (100-33.6)}{5^2}$

$= \frac{3.842\ X\ 33.6\ (66.4)}{25}$

$= \frac{3.842(2231.04)}{25}$

$= \frac{8571.66}{25}$

Minimum sample size = 342.9 = 343 approximate.

15% non-response:

$\frac{15x343}{100}$

$\frac{5145}{100}$ = 51.5

Total sample size (n) = 343 + 51.5 = 394.5 = 395 approximated

Therefore, the sample size for the study is 395, approximated to **400**

Sampling technique

Three-stage sampling method was used in this study. The stages are:

Stage I: Selection of Districts in Plateau State

There are 5 districts in Jos East namely; Federe, Fobur, Fursum, Maigemu and Shere. Two districts were chosen from the five using simple random sampling (lottery) method. Fobur and Fursum Districts were selected for the study.

Stage II: Selection of villages from the selected districts in Jos East LGA

Two villages were randomly selected from the two districts, using simple random sampling. Kerker and Sabon Gari villages were selected from Fobur Districts, while Doss and Maijuju villages were selected from Fursum Districts.

Stage III: Selection of women of reproductive age

The respondents for the study were selected from the four study communities, using systematic sampling method, with the houses in the communities as sampling unit, and a sampling fraction of one in four. A maximum of two of the youngest eligible women were selected from each of the selected houses.

Data collection tools

A semi-structured questionnaire was used for the study. It comprises of four sections: Section A obtained responses on socio-demographic characteristics of the participants. Section B assessed the knowledge of maternal health services of the women; Section C assessed the attitude of the women of reproductive age towards maternal health; Section D assessed the uptake of maternal health services of the women; while Section E of the questionnaire assessed the factors associated with the utilization of maternal health services among the women.

Data analysis and management

Data analysis was conducted using Statistical Package for Socioal Sciences (SPSS) version 25. Descriptive statistics such as frequency distributions, percentages, means and standard deviations were performed. Inferential statistics such as chi-square to determine associated factors was performed. The p-value ≤ 0.05 considered statistically significant at 95% confidence interval. The results were presented in tables and figures.

The knowledge of the respondents of maternal health services was assessed with a set of ten questions. Respondents were rated to have good knowledge when they correctly answered seven or more of the questions; they will be considered to have average knowledge when they scored between 50% and 69%, and will be considered to have poor knowledge, if they were able to answer correctly less than five question.

The attitude of the respondents towards maternal health will be assessed with a set of five questions, on a five-point likert scale. Respondents will be scored +2 when they strongly agreed to a positive statement, scored +1, if they agreed, 0, if they were indifferent; scored -1, if they disagree; and -2, if they strongly disagree to the positive statement. The scoring was reversed for negative statement. The respondents will be subsequently rated to have positive attitude towards maternal health when they have a cumulative positive score; they will be considered to be indifferent to maternal health when they have a cumulative score of zero; and will be considered to have poor attitude, if they have a negative cumulative score.

Ethical Approval.

Ethical clearance for the study was gotten from the Ethical and Research Committee of Newgate University Minna. Approval was obtained from the Jos East LGA Healthcare Department. The communities were penetrated through their leaders (Village head). Verbal informed consent was obtained from the eligible women of reproductive age after assuring them of the confidentiality of their information.

Result

A total of 400 questionnaires were administered to women of reproductive age in the selected villages of Jos East LGA, Plateau State, out of which 377 questionnaires were properly completed, and therefore used for analysis, giving a response rate of 94.25%.

Socio-Demographic Characteristics of Respondents (Table 1)

Table 1: Socio-Demographics

Variable	**Frequency (n=377)**	**Percentage (%)**
Age		
18-23	90	23.87
24-29	120	31.84
30-35	135	35.79
36-41	32	8.49
Marital Status		
Single	101	26.79
Married	256	67.97
Divorced/Separated	20	5.30
Highest level of education		
None	33	8.75
Primary	107	28.38
Secondary	132	35.01
Tertiary	105	27.86
Occupation		
Unemployed	12	3.2
Civil servant	61	16.2
Traders	170	45.1

Skilled workers	60	15.9
Students	74	19.6
Personal income		
None	74	19.6
Less than or equal to #20,000	110	29.2
#20,001-#60,000	96	25.5
#60,001-#100,000	85	22.5
#100,001 - #140,000	12	3.2
Family income		
Less than or equal to #20,000	135	35.8
#20,001-#60,000	146	38.7
#60,001-#100,000	84	22.3
#100,001 - #140,000	12	3.2

The survey reveals that a majority of respondents, constituting over 65%, are aged between 18 to 35, with the age group of 24 to 29 being the most prevalent. Regarding marital status, nearly 68% of respondents are married, while approximately 27% are single, and only about 5% are divorced or separated. Education levels are fairly evenly distributed among primary, secondary, and tertiary education, although secondary education slightly edges out. In terms of occupation, traders constitute the largest group at 45.1%, followed by students (19.6%), civil servants (16.2%), and skilled workers (15.9%), with a smaller percentage being unemployed (3.2%). Despite the variety in occupation, a significant portion of respondents report personal incomes below #60,000, with the majority falling within the ranges of less than or equal to #20,000 and #20,001-#60,000. Similarly, family income distribution mirrors personal income, with a considerable number of respondents reporting family incomes below #60,000.

knowledge of maternal health services (Table 2)

Table 2: Respondents' knowledge of maternal health services

The findings indicate a high level of awareness among respondents regarding various aspects of maternal health services. A majority (94.35%) recognize the

Knowledge of maternal health services	**Frequency**	**Percentage (%)**
Pregnant women should register as soon as possible when they notice that they are pregnant	334	94.35
Care during pregnancy is best provided by a trained health worker	163	46.05
Regular attendance to the antenatal clinic is necessary to ensure that the danger signs of pregnancy are detected early and treated	286	80.79
Danger signs of pregnancy include small drops of blood	135	38.14
Pregnant women should take regular blood tablets to help up their blood, to compensate the one that will be lost during child birth	297	83.90
Women who are pregnant for the first time should have their antenatal care in a health facility with experienced skilled workers	147	41.53
Tinned foods are necessary to ensure the proper growth of the child in the womb	273	77.12
Pregnant women should start saving money to pay for delivery, especially if the pregnancy has been difficult	330	93.22
Each community should have a means of transport that can be used to speedily transport pregnant women for emergency care in the hospital	330	93.22
Tetanus immunization is one of the vaccinations given to a pregnant woman	313	88.42
Mean Knowledge Score: 6.52+/-1.16		

importance of early registration for pregnant women, while nearly half (46.05%) understand the necessity of professional healthcare during pregnancy. Additionally, a significant proportion (80.79%) acknowledges the importance of regular attendance at antenatal clinics for early detection and treatment of pregnancy-related issues. However, there are areas of potential misinformation, as only about 38.14% are aware of small drops of blood as danger signs during pregnancy, and 77.12% mistakenly believe tinned foods are necessary for fetal growth. Nonetheless, there is a good understanding of nutritional support (83.90%) and the need for financial preparation (93.22%) for delivery expenses, as well as awareness of the importance of transportation (93.22%) and tetanus immunization (88.42%) for maternal health (Table 2). The findings reveal that a small proportion (5.97%) of respondents have poor knowledge, while a larger percentage (28.85%) have average knowledge. The majority of respondents (65.18%) demonstrate good knowledge (Table 5)

Attitude towards maternal health (Table 3)

The majority of respondents strongly agree that pregnant women should register early (75.99%) and that communities should have emergency transport (75.99%). A significant portion agree that first-time pregnant women should seek care from skilled workers (53.95%) and that pregnant women in danger should be swiftly taken to the hospital (72.88%). However, fewer respondents agree that pregnant women should save money for delivery expenses (8.19%), with a notable percentage expressing indifference (11.02%) or disagreement (29.38%). These findings highlight varying attitudes towards maternal health, with strong support for early registration and emergency care but mixed sentiments regarding financial preparation (Table 3). Regarding attitudes, a large majority exhibit positive attitudes (87.77%), while a smaller percentage are indifferent (9.81%), and only a few respondents express negative attitudes (2.38%) (Table 5)

Table 3: Respondents' attitudes toward maternal health services

Variables	**Strongly Agree n(%)**	**Agree n(%)**	**Indifferent n(%)**	**Disagree n(%)**	**Strongly Disagree n(%)**
Pregnant women should register as soon as possible when they notice that they are pregnant	269 (75.99)	67 (18.93)	4 (1.13)	9 (2.54)	5 (1.41)
Women who are pregnant for the first time should have their antenatal care in a health facility with experienced skilled workers	191 (53.95)	102 (28.21)	23 (6.50)	32 (9.04)	6 (1.69)
Pregnant women should start saving money to pay for delivery, especially if the pregnancy has been difficult	18 (5.08)	29 (8.19)	39 (11.02)	104 (29.38)	164 (46.33)
Each community should have a means of transport that can be used to speedily transport pregnant women for emergency care in the hospital	269 (75.99)	72 (20.34)	8 (2.26)	3 (0.85)	2 (0.56)
Pregnant women in danger should be taken to the hospital as possible to save their life	258 (72.88)	71 (20.06)	7 (1.98)	8 (2.26)	10 3.10)

Utilization of Maternal Healthcare Services (Table 4)

A significant majority sometimes receive services from medical professionals (77.5%), while 22.5% always do. During visits, 22.8% report experiencing complications, with 16.2% being transferred to another hospital. However, during delivery, the vast majority (96.8%) were attended by skilled birth attendants, predominantly nurses (87.0%). Most respondents (83.8%) express complete satisfaction with the care received, although 15.9% encountered complications during delivery. Notably, 80.0% of those facing complications received emergency care, while others cited unavailability of necessary drugs or medical supplies. Financial considerations (28.9%), past experiences with healthcare providers (32.1%), and family practices (15.9%) were among the key factors influencing respondents' choice of health facility (Table 4). Utilization level reveals that 38.7% have good utilization, whereas 61.3% exhibit poor utilization of maternal healthcare services (Table 5)

Tabel 4: Utilization of Maternal Healthcare Services

Variable	**Frequency (n=377)**	**Percentage (%)**

Received the services of medical doctor, nurse or skilled birth attendant		
Always	85	22.5
Sometimes	292	77.5
Any complication during your visit		
Yes	86	22.8
No	291	77.2
Transferred to another hospital		
Yes	61	16.2
No	316	83.8
During delivery, were you attended by a skilled birth attendant		
Yes	365	96.8
No	12	3.2
Attended to by		
Doctor	25	6.6
Nurse	328	87.0
Midwife	24	6.4
Satisfaction with care from birth attendant		
Completely Satisfied	316	83.8
Partially Satisfied	36	9.5
Neither Satisfied nor Dissatisfied	25	6.6
Any complication during delivery		
Yes	60	15.9
No	317	84.1
Health facility provide emergency care for complication		
Yes	48	80.0
No	12	20.0
Taken to another hospital for emergency care		
No	60	100.0
Reason did not receive emergency care		
Necessary Drugs Unavailable	48	80.0
Necessary Medical Supplies/Equipment Unavailable	12	20.0
Amount spent for MHS during last visit		
< or =4000	108	28.6
5,000 - 10,000	148	39.3
15,000-20,000	61	16.2

25,000-30,000	60	15.9
Factors considered most before using health facility		
Financial	109	28.9
Family Practice & Traditional Norms	60	15.9
Past Experience with Healthcare Providers	121	32.1
Sex of the Medical Personnel	37	9.8
Health Centre too Far/no Transport	25	6.6
Environment where the facility is located	25	6.6

Table 5: Level of knowledge, attitudes and utilization

Variables	**Frequency**	**Percentages**
Knowledge Level		
Poor	31	5.97
Average	150	28.85
Good	196	65.18
Attitude Level		
Positive	331	87.77
Indifferent	37	9.81
Negative	9	2.38
Utilization Level		
Good	146	38.7
Poor	231	61.3

Factors associated with the utilization of maternal health services (Table 6)

Age, marital status, tribal affiliation, occupation, and family income emerge as significant factors influencing utilization. Specifically, individuals aged 30 years and above ($p < 0.001$), married respondents ($p = 0.001$), indigenous individuals ($p = 0.005$), employed individuals ($p = 0.036$), and those with family incomes above #60,000 ($p = 0.009$) demonstrate better utilization compared to their counterparts.

Table 6: The factors associated with the utilization of maternal health services

Variables	**Level of Utilization of Maternal Health Services**					
	Good (n(%)	**Poor (n(%)**	**Total**	***df***	***X^2***	***p-value***
Age (years)						
≤29year	73 (31.6)	158 (68.4)	231 (100.0)	1	12.761	0.000*
≥30years	73 (50.0)	73 (50.0)	146 (100.0)			
Total	**146 (38.7)**	**231 (61.3)**	**377 (100%)**			
Marital status						
Single	24 (24.7)	73 (75.3)	97 (100.0)	1	10.764	0. 001*
Married	122 (43.6)	158 (56.4)	280(100.0)			
Total	**146 (38.7)**	**231 (61.3)**	**377 (100%)**			
Tribe						
Indigenous	146 (40.0)	219 (60.0)	365 (100.0)	1	7.834	0. 005*

Non-Indigenous	0(0.0)	12(100.0)	12(100.0)			
Total	**146 (38.7)**	**231 (61.3)**	**377 (100%)**			
Level of education completed						
< tertiary	109 (40.8)	158 (59.2)	267 (100.0)	1	1.696	0. 193
Tertiary	37 (33.6)	73 (66.4)	110 (100.0)			
Total	**146 (38.7)**	**231 (61.3)**	**377 (100%)**			
Occupation						
Unemployed	25 (29.1)	61 (70.9)	86 (100.0)	1	4.379	0. 036*
Employed	121 (41.6)	170 (58.4)	291 (100.0)			
Total	**146 (38.7)**	**231 (61.3)**	**377 (100%)**			
Personal Income						
≤ 60,000	74 (40.2)	110 (59.8)	184 (100.0)	1	0. 337	0. 562
≥ 60,001	72 (37.3)	121 (62.7)	193 (100.0)			
Total	**146 (38.7)**	**231 (61.3)**	**377 (100%)**			
Family Income						
≤ 60,000	98 (34.9)	183 (65.1)	281 (100.0)	1	6.898	0. 009*
≥ 60,001	48 (50.0)	48 (50.0)	96 (100.0)			
Total	**146 (38.7)**	**231 (61.3)**	**377 (00%)**			

Discussion

The study aims to assess the utilization of maternal health services among women of reproductive age in the selected villages of Jos East LGA, Plateau State. Socio-demographic characteristics reveal that the majority of respondents fall within the age range of 18 to 35, with the age group of 24 to 29 being the most prevalent. Married individuals constitute the largest marital status group, and a significant proportion of respondents have attained secondary education. Traders comprise the largest occupational group, while personal and family incomes predominantly fall within lower brackets.

The survey demonstrates a commendable level of knowledge and positive attitudes towards maternal health services among respondents. Most respondents acknowledge the importance of early registration, regular antenatal care attendance, and financial preparation for delivery expenses. However, there are areas of misinformation regarding danger signs during pregnancy and nutritional requirements. Despite these, the majority exhibit good knowledge and positive attitudes towards maternal health.

In terms of utilization, the study identifies key factors influencing access to maternal health services. Age, marital status, tribal affiliation, occupation, and family income significantly impact utilization levels. Older age, marriage, indigenous status, employment, and higher family income are associated with better utilization rates. These findings underscore the importance of addressing socio-demographic disparities to enhance equitable access to maternal healthcare services.

Moreover, the utilization of maternal health services reveals areas for improvement. While the majority sometimes receive services from medical professionals, a notable proportion faces complications during visits. Satisfaction with care received is generally high, but complications during delivery highlight challenges in service provision. Financial constraints and resource unavailability pose barriers to emergency care access, indicating systemic issues that need attention.

Conclusions

This study provides comprehensive insights into the utilization of maternal health services among women of reproductive age in selected villages of Jos East LGA, Plateau State. The socio-demographic analysis reveals a predominantly young, married population with secondary education and modest incomes, primarily engaged in trading. Despite gaps in knowledge regarding pregnancy danger signs and nutritional requirements, overall, the majority exhibit good knowledge and positive attitudes towards maternal health. Significant socio-demographic factors influencing utilization include age, marital status, indigenous status, employment, and family income, highlighting the importance of addressing disparities in healthcare access. Challenges in

service provision, such as complications during visits and delivery, as well as financial constraints and resource unavailability, underscore the need for systemic interventions to improve service delivery and ensure equitable access to maternal healthcare services in the study area.

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